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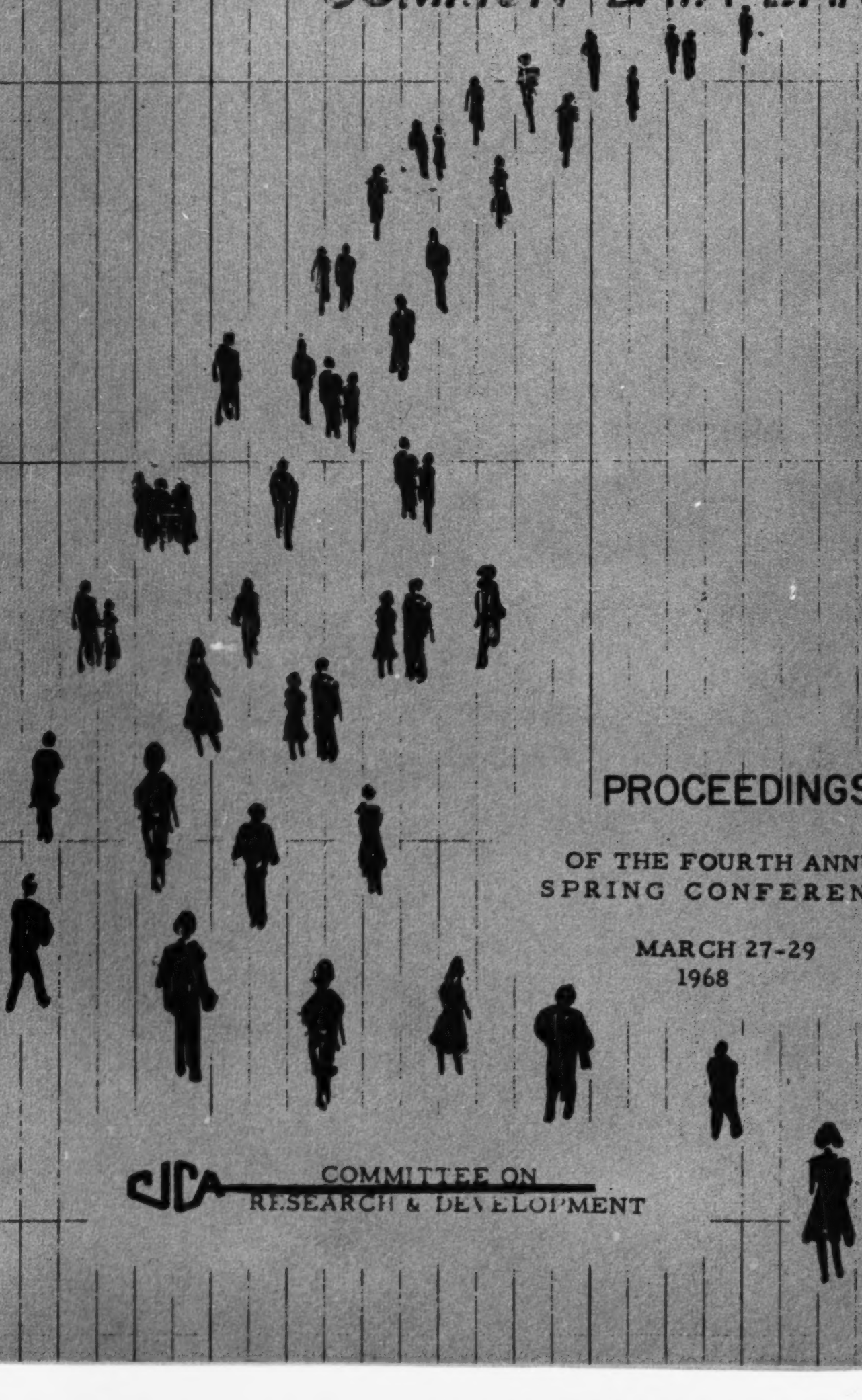
To encourage dialog between institutional research workers in the junior colleges of California, a conference was called to discuss the development and use of a common data bank. The eight major addresses included (1) a review of the past year's activities of the California Junior College Association's Committee on Research and Development, (2) a discussion of project proposals submitted to USOE, (3) the need for a common data bank, (4) requirements for a data bank, (5) processing a data bank, (6) a design and model for year-round operation (academic calendar), (7) a summary of recent (8) a design and model for a technical-vocational student followup study. In addition, workshops were held for the purpose of selecting approximately 10 questions common to almost all junior colleges in California and to list kinds of data that must be collected to answer the questions, indicating primary and secondary information. The workshops focused on the retrieval of data relevant to junior college (1) students, (2) staff, (3) instruction and (4) administration. (DG)

DEVELOPMENT AND USE OF A

COMMON DATA BANK



PROCEEDINGS

OF THE FOURTH ANNUAL
SPRING CONFERENCE

MARCH 27-29
1968

AFIPS
COMMITTEE ON
RESEARCH & DEVELOPMENT

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DEVELOPMENT AND USE OF A COMMON DATA BANK

PROCEEDINGS OF THE FOURTH ANNUAL CONFERENCE FOR DIRECTORS OF INSTITUTIONAL RESEARCH IN CALIFORNIA JUNIOR COLLEGES

Asilomar Conference Grounds, Pacific Grove, California

March 27-29, 1968

Sponsored by the California Junior College Association,

the CJCA Committee on Research and Development,

The Division of Higher Education, California State Department of Education

UNIVERSITY OF CALIF.
LOS ANGELES

JUN 12 1968

CLEARINGHOUSE FOR
JUNIOR COLLEGE
INFORMATION

Edited by Audrey Menefee
American River College

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FOREWORD

The original members of the research and development committee conceived the idea of an annual research and development conference as a planned process to encourage dialogue between institutional research workers. This 4th annual conference, like the previous three, proved to be well worth the investment of time required of the participants.

The need for institutional research in all colleges is rapidly being recognized and slowly becoming a reality in the California junior colleges. Increased emphasis on analyses of institutional data has been fostered by rapid changes now taking place in the State governmental operations of junior colleges.

Enrollments have grown rapidly and will continue to increase even more rapidly; physical plants will need to be carefully planned to meet newly adopted State guidelines; the rapid expansion of knowledge and increasing number of necessary disciplines require careful consideration of future curricular offerings; more must be known about student motivation and potential to assess student course placement more accurately. The conference committee recognized the myriad of problems to which it could address itself, but chose the exploration of techniques in establishing a data bank so that the conference workshops might prepare the participants for future involvement with data bank problems which will confront the staff of the State junior college board.

This year the junior college association lost Tom Merson as its director of research. I don't believe anyone was aware of the enormous work load he was handling until he left the position. The committee missed Dr. Merson's direction and guidance as a full time director and imposed upon his time by asking him to serve as a committee member. He accepted and has contributed immensely to the continuity of purpose of the committee.

This year the committee will make every effort to seek research assistance for all California junior colleges through the establishment of at least one or two research staff positions assigned to the new State junior college board. The committee feels it is necessary to ask for a cooperative research effort from each junior college district in order to furnish the new board with substantive evidence to support future recommendations to the legislature. This year promises to be challenging and with a positive effort on our part we can also make it a rewarding year.

JOHN CARHART
Conference Chairman

Committee Members: Ben Gold, Los Angeles City College , chairman
Marion Bandley, San Joaquin Delta College
James Keene, Foothill Junior College District
Thomas Merson, Bakersfield College
Erving Metzgar, Grossmont College
Frank Pearce, College of San Mateo
M. Stephen Sheldon, UCLA

First Session

Presiding: *Marion K. Bandley, Administrative Assistant
San Joaquin Delta College

THE YEAR IN REVIEW

*BEN K. GOLD, Director of Research, Los Angeles City College,
Chairman, R&D Committee

The California Junior College Association Committee on Research and Development is now in its fourth year of existence. This fourth year is, in many ways, a critical year for the Committee and its impact upon junior college institutional research. Three key personnel changes are largely responsible for this: (1) the Committee has lost the services of its original chairman, Dr. A. Robert DeHart, whose energetic and visionary leadership has upgraded institutional research efforts on junior college campuses throughout the state; (2) after two full-time years of dedicated and highly influential service as C.J.C.A. Director of Research, Dr. Tom Merson felt it necessary to return to a college position; and (3) Dr. Henry Tyler, after providing a tremendous boost to the objectives of the Committee, retired as Executive Secretary of C.J.C.A.

In spite of these major setbacks, the Committee is highly optimistic about the future. Committee members, both holdover and newly appointed, have responded to the challenge and are contributing generously of their time and their many creative talents. Dr. Merson has agreed to continue to serve as a member of the Committee. Dr. Lloyd Messersmith, new Executive Director of C.J.C.A., has by word and deed indicated his approval of the objectives and efforts of the Committee.

It might be well at this point to remind ourselves of the charge to the Committee from the C.J.C.A. Board of Directors. In a statement approved by that body on May 27, 1965, the Committee was directed to "have the primary responsibility to formulate, sponsor, and promote a program of research, service, and development," and was assigned the following specific activities:

1. Stimulate and encourage all junior colleges to sponsor on-going programs of institutional research.
2. Identify critical problems and needs confronting California junior colleges.
3. Solicit and encourage graduate schools and other research institutions to undertake pressing junior college research.
4. Seek financial grants for research projects and employ staff to perform the task, or solicit graduate school or other agency to do the job.
5. Cooperate with State Department of Education and/or other agencies in submitting applications for Federal grants for needed research.
6. Seek ways and means to distribute junior college research findings and information to all junior colleges.
7. Sponsor a program designed to orient and to train institutional research workers.

* Member CJCA R&D Committee

Let me briefly indicate Committee concern and activities in each of the areas.

(1) Stimulate and encourage all junior colleges to sponsor on-going programs of institutional research.

The large number of research people in attendance at this conference, and especially the number of "first-timers" indicates a growing awareness of the need for on-going research programs at the colleges. This growing awareness is also indicated by the fact that several college representatives here at the conference have informed us of current full-time (or almost full-time) positions as research directors now or soon to be in effect on their campuses. In my view, the most significant indicators of concern for institutional research are the activities of two groups of colleges, one in the North and one in the South. The Northern California group has initiated a timely and important study of student withdrawals, and the Southern California group has initiated what may grow into a major study on faculty-student relations. The exciting thing about both of these studies is that they represent the joint efforts of some 25 colleges working together on a common problem.

(2) Identify critical problems and needs confronting California junior colleges.

The now famous Peterson report of 1965 identified critical problems and needs confronting California junior colleges. The Committee has felt no necessity this year to identify additional problems. Our concern now is attacking the problems we already know exist.

(3) Solicit and encourage graduate schools and other research institutions to undertake pressing junior college research.

The presence of Dr. Steve Sheldon as an ex officio member of the Committee is evidence of cooperation with graduate schools. Dr. Sheldon is directing the Danforth Foundation Project at U.C.L.A., a project concerned with inter-institutional junior college research. The Committee is fortunate to have a man of Dr. Sheldon's talents giving generously of those talents, as well as considerable time, to Committee deliberations and activities.

(4) Seek financial grants for research projects and employ staff to perform the task, or solicit graduate school or other agency to do the job.

Two proposals have been submitted for funding to the U.S. Office of Education. More are under consideration.

(5) Cooperate with State Department of Education and/or other agencies in submitting applications for Federal grants for needed research.

Dr. Walter Hirsch has agreed to meet with the Committee to explore ways of increasing the probability of junior college projects being funded, and generally to explore ways of enhancing the junior college image in the Office of Education.

(6) Seek ways and means to distribute junior college research findings and information to all junior colleges.

The Clearinghouse for Junior College Information, about which you will hear more on Saturday morning, is now well beyond the infancy stage and is performing a real service to the colleges. If you have not yet become involved with these services, I urge you to do so. We are pleased that Tom Merson and Lloyd Messersmith both serve on the Board of Directors of the Clearinghouse.

(7) Sponsor a program designed to orient and to train institutional research workers.

This conference is evidence of the priority the Committee gives to this particular activity. I regret that I must inform you that this afternoon the Committee voted not to conduct a Research Institute this summer. Following what we think were highly successful instituter in the summers of 1966 and 1967, we are most disappointed that this action was necessary. Austere budgets and staffing problems precipitated the decision, the Committee judging that no institute would be better than a poor one. The Committee is no less dedicated to the concept of a training program for institutional researchers, however, and will consider alternative approaches -- possibly a "during the year" program.

In addition to the above activities, the Committee approves questionnaires and other instruments individuals wish to send to C.J.C.A. colleges, considers research problems requiring articulation with other educational segments, provides what expertise it can to other C.J.C.A. committees involved in research activities, considers proposals of private agencies related to junior college research and development, and responds to miscellaneous relevant items.

I think you will agree that the Committee on Research and Development is an active and a conscientious one. We have spent many hours discussing what should be the main thrusts, and hope shortly to present in writing our collective thinking in this regard. At this point we earnestly request your help. If you have ideas about what the Committee should or should not be doing, I hope you will put them in writing and send them to me. I guarantee they will be given a full airing at a Committee meeting.

In concluding, may I express my thanks to each Committee member for his consistent giving of time and effort. We have a fine well-balanced Committee, each with creative ideas and dedication. A special thanks to Jack Carhart for being general chairman of this conference, and to Jim Keene for handling the many physical details. A very special thanks to Audrey Menefee for editing and producing the proceedings of the conference for the fourth straight year.

Thank you all for coming. I hope you have a very profitable two days.

THE SMALL GRANT APPROACH TO JUNIOR COLLEGE RESEARCH

WALTER HIRSCH, Director, Educational Research,
U. S. Office of Education, San Francisco

I came to the Office of Education last July 4 as a fugitive from the Pentagon, and to the San Francisco office in August. I am pleased to see so many of the faces behind the voices that I have met on the telephone. My talk tonight is not a canned one, it has not been cleared by the Office of Education. It will be an informal summary of some of my own observations since coming to this job in San Francisco last August.

First, some of the problems that plague all nine regions of the Bureau of Research, Office of Education. In a leading position is the high rejection rate of proposals. Seventy-five percent of all proposals submitted to us were rejected in fiscal 1967. This is not always the fault of the initiator. His proposal has to run the gamut of four major criteria, the first one of which is "educational significance."

This is a vague term. It involves more than consideration of the project itself. It involves attention to the breadth of the project proposal's impact, its relationship to other on-going and completed research and its capacity for contributing to other educational improvement within the context of "total research needs" as the Bureau sees these. I would refer you to what we call the little golden book titled Regional Research Program; it is published by the Bureau of Research for small project research and dated October, 1967. You will notice in this book that the criterion stacks everything in favor of the house -- that is, the government -- since, actually, who but the government knows just what are the on-going programs at any given time.

This one factor -- a project's relationship to other on-going programs, and the related educational significance of the project -- floor about 60% of those that are rejected.

The second criterion concerns research design. It involves judgment of methodology and procedures, and this criterion accounts for about 30% of the casualties. Since I came to this job, I have been encouraging potential applicants to submit their proposals to me for a preview so we can discuss the project before it's officially submitted.

The third criterion involves consideration of personnel and facilities. These must be adequate. If a project lacks adequate technical personnel or facilities it will not be supported regardless of its merit.

The fourth criterion is economic efficiency. This means, simply, how much of a "pay-off" is there in this proposal for the needs of education. How much justification do we have to commit the taxpayers' dollars to the proposal.

Now let me list some of the problems that we meet in the general task of reading and approving and funding proposals for research. One occurs in the area of dissemination, utilization, and implementation of proposals. There is too big a gap between each of these elements. It is still a sort of hit and miss procedure. There is no "grand plan" for disseminating and

utilizing research findings.

Another problem is that of coordinating all the research and development reports. This one stems naturally from those I just mentioned.

The research-poor, or research-small, institutions (and this would include most junior colleges) lack adequate identification with the O.E. Faculty members in these institutions are not in the mainstream of educational research, and as a result they haven't been getting their share of small grants. There has been a very small improvement in this area over last year -- but just a small one. I'm proud to say, however, that Region 9 which includes California accounts for most of the unsolicited business of the Bureau of Research. We have more such business than several other regions combined, and I hope that we can more than double the amount that we have built up so far.

There is also the problem of erratic funding, resulting from occasional freezing of Office of Education funds.

There are too few Office of Education Readers, that is, too few experts -- homogenized, Grade A experts drawn from a list of experts on contract with the Office of Education. The ones we have are almost all full-time professors in the large universities. I will admit that they don't always appreciate what the junior colleges are trying to do. They are often vague, too, about the reasons for their rejection of proposals from small institutions. Until last September, we had the benefit of 3-man interdisciplinary panels. But even here I observed that decisions were often split. There would be 4 to 1 decisions, for example, or 3 to 2 decisions.

Another problem comes of long distance decisions. The decisions are made in Washington, and most junior colleges don't have representation "on the ground" there.

I had some good news recently, that our program was expected to double this fiscal year from 2½ million to 4½ million dollars. I was told that ten days before President Johnson cut the budget.

What of the future?

In the San Francisco office we are now hoping to get a complete ERIC collection on microfiche. This will enable us to respond to queries from people who come in for information. We are still too shorthanded to get very far with this project, however.

We are also working on a program of building up teams, 4-man regional research teams who will go out and consult with the junior colleges. They will undergo a 3-month training period and then travel to spend a week, or even two weeks, in a given institution. They will also conduct workshops for groups of schools. The teams will probably be made up of young doctorate fellows who are willing and able to do the necessary traveling. In our San Francisco office, we're hoping to get the first 4-man team fielded by next February.

The Bureau of Research is working on plans to develop consultants, also, who will be spotted at various institutions. This program will go into effect by 1969. The job of the consultants will be to help staff of neighboring institutions to get started on research, and to give assistance on their research problems.

We are also enthusiastic about teacher education programs at various levels -- pre-school, early childhood, high school. We will try to set up junior college educational networks in this program. The Bureau of Research has definite plans to emphasize teacher education in the next five years.

We will be progressively more involved in computer usage, in developing it and getting it located where needed.

The development of basic research programs involving top scholars will be on our agenda. This program will include scholars from outside the educational community. It has been said, you know, that education is too important to be left to the educators.

The specific thing we are most interested in is giving assistance to research and development in junior colleges. We are concerned about isolated schools and isolated school systems, and we are interested in the education of teachers, focusing especially on individually prescribed instruction. We are involved in still another new development in which the Stanford Research Institute and its counterpart at Syracuse University are trying to develop broad educational research policy. They are trying to build data on which to provide educational policy makers on all levels with information that will help them in planning their future needs.

Discussion

A participant from Southern California asked if there was a chance that a branch of the Bureau of Research could be set up in Southern California so there would be easier access for the people down there. Response was that this was probably not likely, at least not for several years until our "overseas commitments" were reduced.

Asked about current trends in the rejection rate for junior college research proposals, the speaker replied that he hoped rejections would run at "only 40 to 50%" this year.

Participant asked if it would be possible to have junior college research people represented on the review teams. Dr. Hirsch responded that he has been urging this very thing. On the question of Readers, he was asked whether this committee (the R&D group) of the CJCA might be able to nominate individuals, and would their nominations be welcome. Dr. Hirsch said "Yes," he would appreciate such nominations.

A participant pointed out that junior colleges take pride in being teaching institutions rather than research institutions. How then,he asked, can we get more junior college faculty members involved in research. This is one of the accomplishments, Dr. Hirsch said, that might result from sending out R & D teams to chat with faculties and presidents of junior colleges. The need for research and the attitudes toward research are different in all the states and regions, he said. He urged junior colleges to put research coordinators on their staffs, persons who would be concerned with writing research grants for the colleges, i.e. project proposals, as well as conducting institutional research. They would wear two hats. As for being teaching institutions, he pointed out that teaching is the main mission of all educational institutions, not just junior colleges. But the need for research to back up or support the teaching function remains urgent.

He went on to say, "You people in this room, through the meetings you have held here in recent years and through your activity in junior college research, have influenced the Bureau of Research in its attitudes toward junior college research, toward the need for it and the need for federal funding and encouragement....It all comes back, of course, to the same old question -- what will fly? -- and that is determined by what will sell the Reader."

A participant related how he had gone to San Francisco to discuss with Dr. Hirsch a dropout study that had been sponsored as a cooperative proposal by several Northern California junior colleges. The study was in two parts and the application for the smaller part, the preliminary exploratory study, was turned down. The participant felt that if this group of colleges had been well known 4-year institutions, the chances for the study's being accepted would have been much greater. Dr. Hirsch replied that an effort was being made to change the "divisions of the pie" to increase the size allocated to small institutions, especially small high-priority institutions such as junior colleges. In fiscal 1966, the first year of the program, he said that these institutions received 16% of the pie, and the next year a fraction more. But Region 9, he said, was doubling its allotment from 16% to 34% or 35% this year (a percentage that would include also several high school districts). He is encouraging teachers who are on sabbaticals to submit proposals. He is talking to the Readers. He added that personally he preferred the original panel system, feeling that system was perhaps more effective in its representation of persons acquainted with the special needs of junior colleges.

A participant said that in his view "some of the most irrelevant so-called problems" concerning junior colleges originate with university people. He didn't see any real promise of junior colleges getting into the mainstream of research when junior college "research" continues to be originated, directed and conducted by university people who don't know enough about junior colleges to know what junior college problems are. Dr. Hirsch replied, "Do send me a preview of your project in advance. Let me have a chance to advise and assist."

A participant proposed that a group of 10 or 12 junior college research people might visit the speaker, in San Francisco, and discuss particular common problems to get his advice on how to present their ideas so the proposals might be viewed by Readers as having a high priority. Dr. Hirsch agreed readily.

A participant suggested that it might be helpful to submit a one-page summary of a proposed piece of research for Dr. Hirsch's preview, and the response was favorable. The speaker pointed out, "Be sure it hasn't been done elsewhere. We don't have time in the regional office to check into the matter of related research. You must do your own homework."

A participant argued that the matter of 'common problems' and 'common student characteristics' in the junior college was exaggerated: What you discover about student characteristics at Merritt College will have no application to Reedley College, for example -- Merritt being in an urban community with a high proportion of disadvantaged people and racial minorities and Reedley being in an old established Mennonite farming community. There is no relevance, he said, between what needs to be done in Michigan junior colleges and what is applicable to College of San Mateo. He felt that the U. S. office was really "off base" not recognizing that junior

colleges differ from each other. They are established to reflect and to meet the needs of their own communities and each community differs from all the others. Dr. Hirsch replied there are many more similarities among people than there are differences, and therefore probably more similarities than differences among communities. The ways of solving problems of human beings who make up communities certainly have common elements. He raised the question, "The State Departments of Education get billions of dollars by formula; what are they doing for you? What are your congressmen doing to represent you?" Congressmen, he added, can often be extremely helpful in pointing out to the Office of Education or any other administrative subdivision what is needed in their communities, whether it is research or something else.

A participant asked about the possibility of setting aside a percentage of the Office of Education research budget for junior college research, or to support the addition of more Readers who are familiar with junior colleges. The speaker said he actually hadn't had very many junior college applications. He had had none at all from the fields of technical-industrial education. He said, "I'll send a one-page form to anyone who wants to be a Reader," but he added, "I can nominate Readers but they are selected in Washington."

The question was raised whether a direct confrontation or transaction could be possible between the applicant and the Readers. The answer was "No." In the past this was possible when the panels were in existence, but these were abolished because the funds to support travel were cut off. He said the lists of Readers, however, are being changed, and this is a "bright sign." Even if a junior college R & D proposal is or is not accepted by a Reader, he pointed out that this Reader could be overruled by the other two.

Some discussion ensued about Dr. Hirsch's suggestion that the institutional research man should also be the project writer. One participant had just such a position, and found he was spending 95% of his time writing proposals which were actually for the purpose of funding the junior college itself -- buildings, etc. -- and 5% in reading. He had no time to conduct actual institutional research. Dr. Hirsch referred again to the promise of the 'networks of knowledge,' as he put it, which Commissioner Howe sees as encompassing the cooperation of R & D people from higher educational institutions across the country.

In response to a question about the range or the spread of grant applications, he said that 165 came in last year. Of these 47 were approved; 1150 had come into all 9 regions; of these a total of 250 had been approved. He went on to say that 120 proposals had been received at San Francisco already this year, of which 34 have been approved. There are some held over from last year, and in a sense he is already over-committed by the holdovers. He said that the Bureau of Research disperses something like $100 million a year in these small grants.

Discussing the fact that the junior college does appear now on various lists of priorities for federal spending, he said these colleges -- while they are mushrooming and getting attention, finally -- still tend to send in proposals that are couched in terms not acceptable to Readers. Sometimes the proposals are really descriptions of programs or of operations; they are not designed properly as research, but still some are "winning." He recommended that project writers play down the developmental aspect of their applications, that they emphasize instead evaluation. Washington, he says, is apt to say, "This is not research. This is development."

Second Session

Presiding: *Erving F. Metzgar, Vice President for Instructional Services, Grossmont College

THE NEED FOR A COMMON DATA BANK

*JOHN I. CARHART, Director, Research and Planning, Contra Costa Junior College District

Historians explain, perhaps with some oversimplification, that scientific progress has been paid for by a loss in pride. For example, our ancestors had scarcely recovered from the shock of finding that the earth was not the center of the universe when evolution and psychoanalysis made further assaults on their feelings of self-importance. It appears that similar changes in self-regard are still going on. Modern man and his institutions are depending on calculating machines to support their own judgments and increase the effectiveness of their own reasoning. The entire realm of policy decision-making within many institutions is being revolutionized by new methods of collecting, collating, and evaluating the data upon which decisions rest.

The need for a common data bank for all levels of education has been a pressing theme by both state and federal agencies for the past decade. Many colleges have fought any movement toward common data gathering for fear of losing institutional control and individuality. When one realizes the amount of required data that is now gathered to answer state and federal questionnaires and reports, the fear of losing individual identity and control becomes only an academic question. I think it is important to recognize that data answering and the automation of data is a fact of life, and our main concern now is not whether to fight its philosophic premise, but how to make its collection work to its greatest potential.

Institutional research occupies a position of central importance in the trend toward scientific management in higher education. Although the nature and scope of such research activity only starts with data collection, the fact is that universities and colleges are beginning to study their programs very carefully -- to develop all types of data about their students, facilities, costs, and operations -- for the purpose of making informed decisions.

The pressures of growing enrollments, curricular modernization, and shortages of funds no longer allow educational institutions the luxury of rule-of-thumb or trial and error procedures. The management science techniques now available to colleges permit an objective comparison of alternatives, in terms of specified goals, and thereby permit the institutions to achieve greater efficiency and fairness in their internal operations. The data analysis should clearly reveal to administration inequities in teaching loads, inefficiency in space utilization, or imbalances in salary schedules. In the external operation of colleges, institutional research studies, using space utilization formulas, cost analysis and other quantitative measuring devices, can provide more solid evidence in justifying requests for support from state and local fiscal resources.

*Member, CJCA R&D Committee

Great attention has to be given to identifying, defining, and collecting on a systematic and timely schedule the data needed for making decisions and for planning. It is assumed that institutional decisions will rest on a factual, objective basis, that they will not be the product of imagination untrammelled by realities. One of the first requisites is for an adequate set of data to show both institutional status and trends. The range of possibilities here is tremendous and the danger is that the enthusiastic collector of data will collect so much of it that recipients are buried by the data and never grasp the implications thereof. The trick is to find a reasonably limited number of key factors upon which data can be organized over a period of say ten years and constantly update these from one year to another. The areas in which basic and common data are most urgently needed will be discussed by Dr. Pearce as a part of our workshop sessions.

One reason I was hired to work in institutional research was that I am curious and inquisitive by nature. Snoopy is probably a more accurate adjective. My first task was to survey all of the college offices to find out what kinds of data they were collecting. I then tried to put all of this information together in an administrative data book, for reference. When faculty and staff asked questions which necessitated the gathering of new data, this information was added to the data book. It grew. State and federal reports and questionnaires were also added, and this material was then organized and collected on a regular basis. I soon found that as data were analyzed many more new questions were raised that led to gathering of yet more data. A small data book grew in four years from 6 to 38 pages of summarized data. I assume the amount of data that could be collected in this manner could go on ad infinitum. As I mentioned, it is necessary to limit the data to key factors around which information can be organized and analyzed over a period of time, portraying status and trends.

The main purpose of my data collection and analysis was to allow the decision-making process to be based upon reliable information, gathered and analyzed over a period of years. The analysis of the collected data can be very useful to stimulate changewithin the institution. I soon found that it was difficult to compare the data I had accumulated with statewide or national statistics because there were so few reports and studies that clearly defined how and when the data were collected. Example -- statewide grading patterns. It would seem to be a simple task to report the number of A's, B's, etc. given at each institution. The variables become confounded, however, bacause most institutions officially register students for grade purposes at different times during the semester. The time factor then changes the total number of enrollees in any given course, so that the percentage of any given grade is not comparable among institutions. Another variable that has to be explored in the grading pattern is the system of grading for sub-level courses. Some junior colleges will not give a grade higher than a C in any college sub-level course, while others scatter grades over the total grade range. My point is that in order to analyze data from other college studies and reports, precise definitions of terms are needed along with a common data base.

In both northern and southern California cooperative research studies and the use of common data processing programs are bringing colleges closer to the reality of a common data base. The economics of any one college completing all the programming it needs to automate data for research studies and for fiscal and student personnel procedures is prohibitive. The economic facts of life are pressing all of us to search for more economical means to solve our problems. In order to cooperate with other colleges,

however, common use of the same data collection systems and definitions is required, and this some college officials object to.

The amount of time, money, and energy that can be saved is enormous if we can be assured that completed studies have a common data base.

Within the past few years new state laws have forced all of us to report common data to the State for either the Coordinating Council or the State Department of Education. Indications are that in future an even greater amount of data will be sought. The Coordinating Council, for example, has recommended (in staff report #67-15 adopted by the Board on October 31, 1967) that comprehensive information systems be developed and automated in all three segments of higher education. The systems are to permit statistical analyses of such factors as faculty workloads, class size practices, and course spread practices, for annual transmittal to the Council. Instructional practices and faculty load expectations may then be analyzed on basis of cost and other underlying variables.

The schedule calls for that data system to be put into effect for the fall term 1969 (one year from this fall).

It's my opinion that the new State Junior College Board will need a great deal more data than is now available to them to document proposals that are going to be made to the Legislature. It will need more than had been previously given to State Department of Education. It is my hope that our workshop effort today will be the beginning of a voluntary move on the part of the Junior College Association to secure the common data base that I feel is now an imperative if we are to continue to participate in the control of our institutions.

REQUIREMENTS FOR A COMMON DATA BANK

*FRANK C. PEARCE, Director of Research, College of San Mateo

The materials of an information system are all sent to one place, where they are readily available to all users. The uses of an information system can be described in three major categories. First, there are the day-to-day needs of various college components -- some independent, some interdependent. For these, the data collected and the data required will vary from office to office and from month to month, often including such routine items as class loads, and number of full-time faculty. The system will also contain general reporting on "state of the institution," with data relate to source of students, enrollment shifts and projections -- serving the kinds of reports that are developed independently by state and federal offices, by college components like registrars and business officers, and by agencies like the Coordinating Council for Higher Education. Third, the information system will be instrumental in college decision-making, planning, management, and instruction. It is in this area that institutional research centers, and from our point of view, this is one of the most important uses to which an information system can be put.

In summary, the system must not be dominated by limited objectives or rigidly set by immediate purposes. Potentially it must be multipurpose. Its materials must be primary. They must also, for the purposes of junior college data needs, be practical.

Principles of Data Bank Construction

1 - Information must be basic, in effect like the elements of the periodic chart -- i.e., faculty degrees, contract salary are basic items, while salaries paid according to degree are derived data. A classification of students according to in-district, out-of-district origins won't tell you the communities that your college serves, but collecting the students' actual addresses tells both. Thus, seek atoms of information that can be combined into compounds.

2 - Information should provide a picture of the total college -- students, staff, instruction, business facilities, etc.

3 - Basic data from all offices should go to one system or location or office, and all stored data should be available for common use and analysis.

4 - Basic data should have common definitions. Ideally each part would have the same meaning for all components of the college, as well as for other colleges regardless of their size or type.

5 - Finally the system should be practical in terms of purpose, time and money. It will not answer every question, nor should it. Specific institutional studies will always be needed.

* Member, CJCA R&D Committee

Combining Data Elements

The elements of a data base can be combined in a great many ways to answer questions in your district. For example, a data base consisting of the students' address, race, verbal ability score and English letter grade can provide answers to the following questions, among others:

1 - Among students in our district do students of one ethnic origin have any more (or less) verbal ability than students of another?

2 - Does our student body have the same racial distribution as the general population in our district?

3 - Is each geographic area adequately represented in our student body?

4 - Do students who reside in one high school district perform any better in English than students from other high schools in our district?

5 - Based upon a student's verbal ability, what is the probability that he will earn a given English grade?

Steps in Building a Data Bank

Determine your categories (subsystems) for data that should be based on the organizational structure of your college. They should be organized around these general categories:

1 - Students
2 - Staff
3 - Instruction
4 - Administration

Identify the questions that will require answers, the purposes for which data is needed. Here are some examples:

1 - What is the student's potential; how does he perform after leaving junior college?

2 - How qualified is the staff? What is our current teaching load?

3 - Are teacher grading practices reasonably uniform?

4 - How adequately are we using our facilities?

Identify the data that will be needed to answer each question. Here are some data examples:

1 - H.S. GPA, standardized test scores, hours student expects to work

2 - Degrees and credentials held by faculty, honors, papers published, years and subjects taught

3 - Proportion of each letter grade by class, department, division

4 - Square feet, type of space, maximum-minimum capacity, space assignment

Decide which data are primary or basic and which are secondary:

1 - Primary data, that which is required constantly, each semester or year. It is reoccuring. It is that data which every junior college needs. It yields derived data.

2 - Secondary data. This may be unique to a given junior college, something nice to know. It is not reoccuring; it has low priority; it is not critical; it is not absolutely essential information.

Operationally define each data bit:

1 - Provides common meaning such as "Handbook of Data and Definitions in Higher Education." H.S. GPA needs uniform definition, e.g.

Decide the "best" means of collecting the data:

1 - Source
2 - DP
3 - Instruments
4 - Mechanics -- key punch, scanner, etc.

PROCESSING A DATA BANK

*M. STEPHEN SHELDON, Director, Danforth Foundation Project, UCLA

There is no such thing as a private science. If one does research on a junior college campus that is to have meaning for other colleges or for the same college over a period of time, it must have the characteristics of replicability and generalizability. As a consequence, we in the California junior colleges must work toward the development of a common data pool or a data bank. This means that all those who would "deposit" and "withdraw" data must be collecting the same basic information about their students, about their staff, and about their college.

It further means that a method for "depositing" and "withdrawing" must be established. Considering the quantity of data which it is anticipated will reside in the bank, the only instrument for the accounting system is a high-speed electronic digital computer. The state of the art of electronic data processing is ready-made for our use. Input-output devices (deposits and withdrawals) can be part of our own facilities or can be connected through rented telephone lines to centralized locations.

The repository of data or storage facilities is almost unlimited in present-generation computers, as far as quantity is concerned. The advent of disk-packs makes available space for millions upon millions of bits of information.

To utilize electronic data processing equipment for meaningful institutional research, we must operationally define to the last detail the explicit information which we wish to use in our research. One part of the purpose of this conference is to get a start in this very important job of operationally defining the basic data for our research use.

* Member CJCA R&D Committee

At UCLA we have six fulltime people in the School of Education working on junior college institutional research. A current and important development is that research being conducted increasingly in cooperation with private or commercial agencies, such as the Danforth Foundation project which has the same title as that of this discussion. We have no option any more on the matter of building and processing a data bank. The amount of required data is becoming too horrendous; there are simply not enough 18-year old clerks to go around. If we don't make rapid progress in this area we can have chaos in ten years.

Services of a common data bank will fall into two general categories: descriptive (how many out-of-state tags are there in the college parking lot?) and investigative (examining the effect of actions, trying to predict consequences). About 90% of our efforts and money go now toward getting the data itself. With a data bank we'll be able to use that 90% of time to getting answers to important educational questions.

The research I've seen in junior colleges in general around the country still caters to administrative needs; it feeds answers to administrative problems, rather than helping students to learn.

The loss of Tom Merson as research director for the CJCA has hit all of us; each of us is having to put in time trying to make up for that loss. We will have to do cooperatively some of the things he did for us for two years, and for this we need to recruit people who are completely devoted to the cause of research.

I would not expect to get a consensus from our workshop groups this morning. There is a certain paranoia in the junior colleges, evident in relations among and between colleges, districts, and regions of the state. Whatever consensus we are able to reach must come about through mutual compromise.

I'll close by repeating that studies of any description conducted without a common data bank will be no research at all in ten years; it will just be nose-counting. This is the importance I ascribe to the common data bank project that we have going among junior colleges in southern California now.

Third Session

Presiding: Frank Pearce, Chairman

WORKSHOPS

During the course of the workshop sessions group leaders and recorders were appointed and instructed to accomplish the following, in the general areas of 1) student data, 2) staff data, 3) instructional data, 4) administrative data:

1. Institute a brainstorming session where each member of your group is to pose questions that junior colleges are commonly asked to answer. The questions, however, should relate only to the general college segment for which your group is responsible. You should not worry about the value or wording of a question but simply list them all.

2. Pick five or ten questions that your group feels are common to almost all junior colleges in California.

3. For each question identified select and list the kinds of data that must be collected to answer the question. In effect, make a list of required data.

4. When the kinds of data have been listed, indicate which of it is primary (must be collected by all colleges) and which is secondary.

5. The questions and data for each group will be duplicated and distributed to all conference participants. Each group leader should be ready to take ten minutes tomorrow morning to discuss the efforts of his group.

6. If time permits, you may wish to concern yourselves with operational definitions of the data and how the data could best be collected. However, time is so limited that you may wish to put severe limitations on concerns relating to data definition and collection.

* * *

The reports of the workshops follow, as they were submitted and discussed on the following morning, during the fourth session.

STUDENTS

Chairman: Ben Gold
Recorder: Audrey Menefee

I. Typical questions relating to students:

1. What is their origin -- urban/rural, cultural, demographic scatter.

2. What is their average placement level on entrance? On exit? What proportion can reasonably be expected to meet objectives set by the college?

3. What trends are discoverable in changing characteristics of the students? Can the junior college continue to hold to the open door policy?

4. What are students' objectives? Aspirations? Goals? (Why are they here?)

5. How successful are we in meeting the demands set by their goals?

6. What majors are being selected? How many are undecided? Why?

7. Who are the "potential" students, those who dropped out of sight after H.S. Why aren't they enrolling in college?

8. What is the student persistency rate? How many graduate with the A.A., how many go on to get an A.B.?

9. What interest is there in extra-curricular activities? What kinds of activities should be offered?

10. What is the financial position of the students, their need for scholarships, loans, grants.

11. What kinds of personal counseling do they need; what counseling is being made available to them; what is our degree of responsibility for educational/vocational/personal counseling?

12. What is the state of the students' physical/mental health? What needs are there for tutoring, special services, remediation. Are these being offered?

13. What special skills, aptitudes, are represented; how are these being developed by college services?

14. What degree of participation should students have in curricular planning; what should be their role in policy making? What role do they want?

15. How are drop-outs identified; should withdrawal be discouraged as a general college policy?

16. What is the relationship, if any, of number of hours worked outside on jobs to class performance; relationship of living and housing arrangements to class performance; of financial need; of transportation arrangements; of marital status?

17. What is there to be learned from available data to assist college in improving student motivation.

18. What kinds of prediction can be made about student success, based on known g.p.a.'s; "drop-out" periods between school and college; military service; age.

19. How many students transfer to a neighboring 4-year college; should requirements of this college be given priority in curriculum? (How many students remain in this area after leaving?)

20. How can student unrest be predicted, controlled, channeled, avoided ? How meet problems raised by "student power" demands, "black power," etc.?

21. What is the relationship of student ethnic data to established "success" criteria?

22. What opinions do students hold concerning the college, its operation, its instruction, its image in the community?

23. What is the proportion of time and money spent on lowest 8% of students; what might happen if this were cut?

24. How identify students who come to the college referred as "outpatients" from public agencies? Do they need special attention? What programs should be established for physically or mentally disabled? foreign language groups?

25. Are admission policies realistic, ideal? What should be ideal junior college admission policies? Should they be uniform or flexible?

26. What kinds of information about students should be restricted or privileged; how can it be used properly and still be protected from improper exposure?

II. Kinds of primary data needed to answer the following questions.

A. What are the pertinent characteristics of incoming students?

1. Sex
2. Birthdate
3. Background: Address (present, legal, permanent) including zip code
4. Social Security number
5. Name/address of last school attended
6. High school graduate?
7. Date of last school attendance
8. High school G.P.A.
9. Eligibility for 4-year college
10. Marital status
11. Draft status (men)
12. Colleges previously attended
13. Status of health
14. Placement (remedial, advanced placement/honors); Educational objectives
15. Vocational objectives (or undecided)
16. Aptitude scores
17. Language spoken in home

B. What information do we need to keep current on students in school?

1. Current and cumulative G.P.A.
2. Number of units taken
3. Number of units completed
4. Number of grade points
5. Stated major

6. Any change in education/vocation objectives
7. Need for financial aid; recipient of scholastic aid: Social Security, Veteran's, vocational rehabilitation, other
8. Employment: on-campus or off-campus, hrs. weekly
9. Scholastic status: Probation? Disqualified? Re-admitted?
10. Type of residence: apt., home, etc.
11. Extra-curricular activities: number of hrs. per week; type of activities
12. Car ownership
13. Honors and/or awards received.

C. Exit and later data:

1. Degrees and certificates earned
2. Transfer: to where
3. Achievement of stated goal
4. Follow-through on job data, etc. for two or more years after leaving
5. Success in transfer

INSTRUCTION

Chairman: Thomas Merson
Recorder: E. F. Metzgar

I. Typical questions relating to instruction:

A. Objectives

1. What are the objectives of specific courses?

2. How are needs for an instructional program determined?

3. How are reported hours in class utilized? How much time does student need to reach course objectives (in class and out-of-class)?

4. Quarter vs. semester as related to formulating instructional (learning) objectives. Time-credit formula.

B. Evaluation

1. How is instruction evaluated?

2. How effective is student placement?

3. How do we evaluate instructional technique and methodology.

4. What grades are given? On what basis do teachers grade? What techniques of evaluation of performance are used?

5. Changes in grading practices within an institution.

6. Efficiency of time blocks in relationship to learning. Time of day course offered? Class size? Credit by time spent or proficiency demonstrated?

7. Attrition, Probation, and Disqualifications.

Reasons for? Time of? Returns of dropouts and withdrawals? Changes in program? Costs of attrition and disqualification? Programs developed for probationary student?

8. Selection of students? How is counseling evaluated as an effective instructional service?

9. How about revision and deleting of curriculum? Make-up of career and technical courses, advisory committees, work experience personnel, and effectiveness, 4-year colleges' influence?

10. Forums, cultural events, and other enrichment programs:relationship to curricular program. Evaluation of effectiveness.

11. Value of 2 years of educational experience on the behavior of students? Validity of the two year limit. How many are really making it in two years?

12. Are there norms or do we need them for specific programs?

13. What are valid criteria for evaluating instruction? Is it money?

14. What are negative factors affecting instruction? What are negative factors influencing faculty morale?

C. Administratively related aspects of instruction

1. What are criteria for student placement?

2. What curricula, majors, transferable programs, and "terminal" programs are in existence?

3. What are prerequisites, hours required? How many units required?

4. Who should take a course?

5. Textbooks and other instructional aids.

What used? Use of library and effectiveness? Availability of materials?

6. How do you initiate, implement, and evaluate research as related to instruction?

D. Human resource aspects

1. Students attitude as a measure of instruction?

2. How do student objectives relate to course or program objectives?

3. Who is involved in curriculum construction?

4. Role of and quantities of academic advisement available or counseling?

5. Kind of educational counseling and effect on instructional programs? Testing?

6. Methods of instruction: remedial, team teaching, interdisciplinary, and off campus.

7. How much of teacher's time is spent in "instruction?" What does a total assignment include? Provision of services to teachers? In-service opportunity and other policies for teacher improvement?

8. How about innovation and change? With whom does it originate, how implemented, how justified, how evaluated? How is "creativity" evaluated?

9. How are principles of learning incorporated into the whole process of curriculum construction, implementation, evaluation, servicing, and selection of students and staff?

II. Basic elements were broken down for a single course, in an attempt to fit the data collected for the questions raised on instruction.

English 1A: The analysis of a course and its effectiveness

A. Definition, number, and title of entry course in transfer English (establish the symbol)

1. Number of hours and kind

2. Number of units taken

3. Qualification for entry

   a. Test cut-off scores
   b. High school grades
   c. Counselor recommendation

4. When taken

B. Statement of objectives of this course should include:

1. Institutional, departmental, student, and community objectives, or justification of the course

2. Perhaps limited to a certain number

C. Methodology

1. Major topics

2. Reading
   a. Text

3. Class size: minimum, maximum, and average

4. Instructional methods: team teaching, discussion, lecture, audio-tutorial, programmed instruction, etc.

D. Evaluation

1. Tests
   a. Type
   b. Number
   c. Time/test

2. Grading practices for determining grade of student in course

E. Outcomes

1. Student's change of attitude

2. Success in next sequential course or related courses

3. Grade distribution results

4. Attrition

5. Performance on standardized test (pre-and post-tests)

6. Student objectives met?

F. Student characteristics

1. Aptitude and achievement data (percentage qualifying and for what reason)

2. Demographic data

3. Personal data

G. Instructor characteristics

1. Motivation (voluntary or involuntary participation)

2. Degrees and academic preparation in teaching field

H. Administrative services

1. Facilities

2. In-service opportunities

3. Load adjustments for course development

STAFF

Chairman: M. Stephen Shelden
Recorder: James W. Keene

I. Typical questions in the staff area:

1. What needs in the certificated staff are foreseen: in 2 years; in 5 years; in 10 years?

2. How should faculty salaries be determined?

3. How should faculty teaching load be determined?

4. How much time should be allocated for carrying out of teaching functions, of scheduling, of staff curriculum evaluation and development?

5. How are the needs of departments for classes determined (e.g., secretarial/clerical, lab assistance, readers etc.)?

6. How do you assign administrative time in relation to administrative function?

7. What classified staff is needed to supplement counseling functions?

8. Are state personnel board surveys acceptable as the basis of job classification and compensation of classified employees?

9. Should administrators be paid on a multiplier of the faculty salary schedule?

10. What is the proper amount of released time for division chairmen? President of Academic Senate? Chairman of the Negotiating Council?

11. Should salary bonuses be paid for merit?

12. How should department heads be selected? Deans?

13. How should teachers be evaluated? Should militancy and resistance to criticism be included as an element of evaluation?

14. What organizational pattern is best suited to the community college?

15. How can the teaching staff be more involved in policy determination? Classified staff?

16. Who should serve on which college committee?

17. How should the budget for conferences and travel be divided among and between departments and administration?

18. How should extended day teaching salaries be related to regular teaching salaries?

19. How should grading practices be evaluated? General education? Career programs? Remedial programs?

II. Kinds of primary and secondary data needed to answer the following questions:

A. What needs are foreseen in certificated staff?

1. Enrollment, K-14, in district

a. By school; by grade
b. Proportion in junior college; in each high school
c. Racial and ethnic

2. Demographic data on community (from outside source).
   a. 4-year college plans for area (from outside source).

3. Historical rate of growth of college

4. Historical rate of faculty turnover

5. Certificated staff:
   a. Age
   b. Sex
   c. Subjects in which qualified to teach

B. How should faculty salaries be determined?

1. Current salary matric

2. Current salary matrices of sister institutions (from outside source).

3. Cost of living index

4. Each faculty member:
   a. Formal education
   b. Work completed on next higher degree
   c. Years of experience
      1) Teaching
      2) Occupational

C. How is teaching load determined?

1. For each instructor:
   a. Course taught
   b. Number of sections for each course
   c. Number of students in each section (enrolled and finished)
   d. Hours of lecture in each course
      1) Medium of instruction (conventional lecture, TV, seminar, etc.)

   e. Hours of laboratory in each course
      1) Type of lab

<u>ADMINISTRATION</u>

Chairman: John I. Carhart
Recorder: Marion K. Bandley

I. Typical questions for administration:

1. Are we utilizing the existing space efficiently?

2. Do we have appropriate space for programs now offered?

3. Is the Monday, Wednesday, Friday pattern of classes an efficient utilization of space?

4. How do you justify space? or What are the factors needed to justify space?

5. What is the availability of part-time instructors from industry? Elsewhere?

6. Are there significant differences in part-time and full-time instructors?

7. How can you better utilize part-time instructors?

8. What are the functions best performed by a central office in a multi-campus district?

9. What are the cost implications of a multi-campus administration vs. a single campus administration?

10. What effects will program budgeting have on junior colleges?

11. What are the factors that enter into the cost per student?

12. How should junior college faculty salaries be determined?

13. How should the load (obligation or responsibility) of faculty members be determined?

14. Should faculty be involved in the budget procedure?

15. What should be the extent of faculty and student involvement in all phases of administration?

16. How effective are the administrators?

17. How much does the community know about the junior colleges?

18. How does a community evaluate a community college?

19. How important is campus aesthetics?

20. How do you go about a bond issue or tax override to insure the passage? Consider the following sub-factors:
Split issues - both bond and override issue
Timing of campaign and voting date
Financial support for campaign
Methods of answering critics
Obtaining news media backing

21. To what degree are junior colleges comprehensive institutions?
How do you decide?
What do you have to know?

22. How can the junior colleges come closer together on many administrative issues?

23. How can junior colleges obtain more federal and state funds to finance many urgent programs with continued local autonomy of operations?

24. Could junior colleges use a three dimension model on students, faculty, and facilities to allow last minute scheduling at the time you are ready to open classes?

25. Would chief administrators be interested and receptive to a dimensional scheduling system for students, facilities, and space?

II. Kinds of primary data needed to answer the following questions:

A. Are we utilizing the existing facility space efficiently?

1. Facilities report data to tell us space on hand
   a. Room number
   b. Type of room
   c. Departmental assignment
   d. Assignable floor area
   e. Number of stations in room

2. WSCH data
   a. Instructors on contract salary or hourly salary
   b. Department or division
   c. Total utilization of facility for time of day
   d. Type of course
   e. Course code
   f. Number of hours of lecture, laboratory, and other of each course

3. Cost data
   a. Original cost of room and/or building when built
   b. Net assignable space cost
   c. Gross assignable space cost
   d. Equipment cost
   e. Engineering index for updating or obtaining replacement cost

4. Instructor data
   a. Name
   b. Social security number or other identifying number
   c. Salary: contract amount; hourly amount

B. What effects will program budgeting have on junior colleges?
Note: Program budgeting puts into focus everything that is done in the school. It will tell such costs as the following:
Course costs
Teacher costs
Fringe benefit costs
Costs per student

Program budgeting involves the following two factors:
(1) Units (2) Dollars
Example: WSCH
ADA

1. Instructor costs
   a. Salaries
   b. Retirement

c. Leaves: sabbatical, sick, bereavement, etc.
d. Insurance: medical, dental, etc.
e. Travel

2. Supply costs
   a. Educational
   b. Administrative
   c. Custodial

3. Plant costs
   a. Maintenance
   b. Utility bills
   c. Custodial
   d. Remodeling

4. Classified personnel costs
   a. Salaries
   b. Retirement
   c. Leaves: sick, bereavement, etc.
   d. Insurance: medical, dental, etc.
   e. Travel

5. Bus transportation costs
   a. Maintenance
   b. Driver salaries
   c. Gas and oil

6. Other programs as applicable

Fourth Session

Presiding: Ben K. Gold,

DESIGN AND MODEL FOR YEAR-ROUND OPERATION

**JAMES W. KEENE, Director, Institutional Research,
Foothill Junior College District**

I have been concerned with development of a theoretical model of year-round operation of the California public junior college, examining the academic calendar in general and the year-round academic calendar in particular. Constraints on a year-round academic calendar for the California public junior college are developed from California law, precedents, and decisions already taken with respect to public higher education in California. We have developed a model of the enrollment demand made by students upon the junior college operating on the semester system, and established an index, termed "utilization index," as a measure of output.

Based on two assumptions -- 1) student enrollment patterns do not change significantly between the semester and the quarter systems; and 2) enrollment varies over time approximately according to an exponential mathematical function, a theoretical method was suggested for converting data on enrollment patterns obtained under the semester system to the quarter system. A model of the junior college operating under the four-quarter system of year-round operations was then developed. Provision was made in the four-quarter model to obtain various values of the utilization index as a function of the proportion of the students electing to enroll year-round.

The two models were applied to twelve randomly selected public junior colleges based on the enrollment demands of a large sample of first-time freshmen enrolling in each college in the fall of 1961 as the demands developed over the next eight semesters. These patterns proved to vary over time approximately according to an exponential function, the utilization index derived from the empirical data. The mean error among the twelve colleges was - 3.75 and the mean absolute error - 4.43%. The error was conservative in that in eleven of the twelve colleges the index derived theoretically was less than the corresponding index computed directly from empirical data.

On the basis that the students who elect to enroll year-round may not be an unbiased cross section of the total student population, a procedure was developed for application of the model to an institution by sub-populations. This involves the application of the model to each sub-population and the weighted recombination of the respective results into a result for the entire population.

We drew conclusions relative to the validity of the model, the high attrition characteristic of the junior college student, and the desirability of a mathematical analysis of the current degree of plant utilization versus the degree to be expected as an aid to decision-making in the realm of academic calendar revision.

We drew implications of the study in the areas of deliberate influence of enrollment patterns, revision of the length of the academic day and week as savings in plant utilization, adjustment of the physical plant to accommodate additional faculty and high attrition rate versus high plant utilization. We made recommendations for further research in the areas of differences among colleges, among the communities they serve, and the dramatic sex differences with respect to aptitude apparent within the urban junior colleges.

Basically, the demand made by a class of first time freshman in successive terms follows an exponential (or logarithmic) curve and the equation of this curve is:

$$E_t = K + (E_0 - K)\, p^t$$

in which:

E_t = enrollment at the beginning of term t.

t = the serial number of the term with the first term assigned the number 0 (i.e., t has the value of the subscript of E)

p = the persistence factor per term expressed as a proportion ($0 < a < 1$)

K = a constant, less than E_0.

An attendance matrix can then be constructed for the semester system --

	F	Sp
Fourth year	E_6	E_7
Third year	E_4	E_5
Second year	E_2	E_3
First year	E_0	E_1

This matrix can be converted to the four-quarter system by doing three things:

-- Introducing a dotted line to split each cell into two sub-cells; the value in the sub-cell below the dotted line representing the demand made by the students who enroll the conventional Sept.-June, and in the sub-cell above, those who enroll year-round.

-- Introducing a new variable, y, representing the proportion of students who elected to go year round.

-- Obtaining a new value of p for substitution in the equation above, based on the relationship:

$$\log P_{(qtr.)} = \frac{2}{3} \log P_{(sem.)}$$

The matrix for the four-quarter system* then looks like this:

	Su	F	W	Sp
Fourth Year		$E_8 - yE_9$	$E_{10} - yE_{10}$	$E_{11} - yE_{11}$
	yE_8	yE_9	yE_{10}	yE_{11}
Third Year		$E_6 - yE_6$	$E_7 - yE_7$	$E_8 - yE_8$
Second Year	yE_4	yE_5	yE_6	yE_7
		$E_3 - yE_3$	$E_4 - yE_4$	$E_5 - yE_5$
First Year	yE_0	yE_1	yE_2	yE_3
		$E_0 - yE_0$	$E_1 - yE_1$	$E_2 - yE_2$

A utilization index could be computed for the semester matrix by

$$\frac{F + SP}{2} \times \frac{3}{F},$$

and for the quarter system by

$$\frac{E_t}{4 \quad \text{(column of largest enrollment)}}.$$

These indices are comparable.

This whole exercise was designed as an analytical tool; its intent was not to provide a cookbook solution, but rather to provide useful insights into what is likely to happen under a conversion. Illustrating with an example I've worked out for one actual college represented at this workshop: Assuming a capacity for 1545 full time equivalent students, with 40% of the students going year-round, the model shows an enrollment pattern for this college among the quarters of

Su	F	W	Sp
598	1545	1223	928

for a utilization index at .6948. What increase could be obtained if the community cooperated in finding employment in the fall quarter for students who were willing to take that quarter off and attend the other three quarters? Application of the model shows the enrollment pattern of these students would be

* To convert this to a matrix for the three quarter system, merely set y = 0.

Su	F	W	Sp
404	---	322	245.

Adding, we get a new total enrollment pattern of

Su	F	W	Sp
1002	1545	1545	1173

for a utilization index of .8519, an increase in plant utilization of 22.6%.

THE CLEARINGHOUSE FOR JUNIOR COLLEGE INFORMATION:

A SUMMARY OF RECENT ACTIVITIES

JOHN R. BOGGS, Staff Member of Clearinghouse, UCLA

The Clearinghouse for Junior College Information, one of 18 decentralized offices of ERIC (Educational Resources Information Center), has recently increased the number of documents added monthly to the ERIC system. At present, fifty new documents on the junior college are sent to the ERIC Document Reproduction Center each month. The Clearinghouse has also increased its publication series. This increase is the result of new emphasis on document analysis.

Four publication series are produced by the Clearinghouse.

1. Junior College Research Review

   The Review is a monthly which is published ten times a year. Each is a review of research reports received and processed at the Clearinghouse.

2. Clearinghouse Monograph Series

   The monographs are in-depth studies and interpretations of junior college topics. They are available from the American Association of Junior Colleges, 1315 Sixteenth St. N.W., Washington, D.C. 20036.

   a. Salvage, Redirection or Custody? Remedial Education in the Community Junior College. Feb. 1968. Price $2.00.

   b. Junior College Institutional Research: State of the Art. Summer 1968.

   c. Personality Studies of Faculty in Higher Education: Implications for the Junior College. Summer 1968.

3. Clearinghouse Topical Papers

Topical papers are occasional statements on pertinent issues in the junior college field. They are available on request from the ERIC Clearinghouse for Junior College Information or through ERIC Document Reproduction Service.

4. Clearinghouse Bibliographies

Two specialized bibliographies have been completed and others are in progress:

a. The Community and Junior College: A Bibliography of Doctoral Dissertations. November 1967. Available from the American Association of Junior Colleges, 1315 Sixteenth St., N.W., Washington, D.C. 20036. Price $1.

b. The Community and Junior College Faculty: A Bibliography. March 1968. Available from the National Faculty Association of Community and Junior Colleges, 1201 Sixteenth St., N.W., Washington, D.C. 20036. Price $1.

In connection with the Monograph on junior college institutional research, the Clearinghouse has conducted a national survey. Funds for the survey were provided by the Junior College Leadership Program. Data for six questions were gathered:

1. How many institutional research studies are conducted annually in junior colleges?

2. What education areas are most and least often researched?

3. What educational areas would junior college administrators like to research?

4. Who coordinates institutional research?

5. Are the variables of staff size, enrollment size, total gross income, age of institution, and type of control significantly related to the frequency of institutional research studies?

6. What general comments do junior college presidents have in regards to institutional research?

Answers to the above questions were based on an 84 percent response from a ten percent stratified random sample of all 837 institutions listed in the 1967 Junior College Directory. Approximately three-fourths of the responses were from presidents or presidents accompanied by other administrators. A quarter of the responses were from deans and research coordinators.

The total number of institutional research studies reported in progress was 119; the number reported completed during the past two school years was also 119. The average number of studies per institution per year was approximately one. Table I shows the areas of junior college institutional research emphasis.

TABLE I
AREAS OF JUNIOR COLLEGE INSTITUTIONAL
RESEARCH EMPHASIS, RANKED BY FREQUENCY OF STUDIES
(N=70)

RANK	AREA	NO. OF STUDIES IN PROGRESS	NO. OF STUDIES COMPLETED IN PAST TWO YEARS	TOTAL	PERCENT OF TOTAL STUDIES
1	Students	45	54	99	41.6
2	Curriculums and Programs	23	26	49	20.6
3	Institutional operations	20	20	40	16.8
4	Faculty	13	8	21	8.8
5	Student Personnel Services	9	7	16	6.7
6	Other	6	4	10	4.2
7	Instruction	3	0	3	1.3
	Total	119	119	238	

Table II summarizes the areas the respondents reported they would like to research. Studies on instruction, the area that received the least amount of research emphasis, moved to the rank order position of three.

TABLE II
AREAS JUNIOR COLLEGE ADMINISTRATORS WOULD LIKE TO
RESEARCH, RANKED BY FREQUENCY OF RESPONSE
(N=70)

RANK	AREA	NO. OF RESPONSES	PERCENT OF TOTAL
1	Students	38	29.9
2	Curriculums and Programs	36	28.3
3	Instruction	17	13.4
4	Institutional operations	13	10.2
5	Faculty	10	7.8
6	Other	7	5.5
7	Student Personnel Services	6	4.7
	Total	127	

Of the 70 institutions, 23 percent had personnel whose primary assignment was to coordinate institutional research. In 44 percent of the institutions, coordination was the responsibility of the president, a dean, or a counselor. Thirty-nine percent had nobody who regularly coordinated institutional research.

The variable most highly related with the number of research studies reported by institutions was enrollment size. This correlation was .75. Comments were volunteered by 49 of the 70 administrators interviewed. The remaining 21 (30 percent) had no comments. Comments were generally supportive of junior college institutional research. Thirty-four indicated that more institutional research was planned, needed, or desired. Eleven commented that finances, qualified personnel, and/or time limited the amount of institutional research attempted. Four suggested that the scope of institutional research should be restricted to "practical problems."

DESIGN AND MODEL FOR TECHNICAL-VOCATIONAL STUDENT FOLLOW-UP STUDY*

WAYNE M. HARRIS, Counselor, San Diego City College

With the advent of the Vocational Education Act of 1963, and other federal efforts in vocational education, the need for some standardization in the collecting and analyzing of data became necessary. The purpose of this study was to prepare a model for an information storage and retrieval system for reporting job placement follow-through data of persons trained in industrial education programs in California public schools, and to make recommendations for the application of the model on a statewide basis. As a result of the study some new forms are recommended, using standardized codes and reporting procedures. The new forms will provide data on job placements for certain required reports, such as VE 45, and will probably reduce the overall number of report forms necessary.

Many of the present-day data gathering methods and processing techniques were considered. The prescored card was selected for the questionnaire instrument. Response positions, punched out by hand, are read directly by various electronic data processing (EDP) techniques.

The registration forms, verification of enrollment and addresses, and the in-class follow-through forms are completed by all industrial education students while still in school. The out-of-class follow-through form is mailed to students after they leave school. Samples of the forms are included in the report, and will be referred to as I proceed.

The system, as planned, may stand alone, operate in conjunction with other EDP projects, or become a part of larger information storage and retrieval systems. The system is versatile and will accept new types of data and data gathering techniques for other evaluations and assessment of industrial education.

The data collected from the students while still in class would permit an unduplicated count of any factor, such as sex, age, ethnic background, or locale of industrial education students, at any time. Many types of directories could be compiled, including industrial education schools and/or classes. Estimates could be made of when the students in any particular training program would be ready for employment.

* Recognizing the need of a system for evaluating and assessing industrial education, the Bureau of Industrial Education entered into a contract with the San Diego Junior Colleges for the services of Wayne M. Harris as Special Consultant, to develop a model, Information Storage and Retrieval System for Reporting Job Placement Follow-Through Data of Persons Trained in Industrial Education Programs in California Public Schools. The study was done during the 1966-67 school year. Acknowledgment is made for the Vocational Education Act of 1963 ancillary funds provided through the California Department of Education, Bureau of Industrial Education, which entirely supported this effort.

The student's major may be identified by declared major or by the actual major. Individual dropouts could be identified early enough to be helped and the dropout rate established for the total state or by special groups.

Last, but not least, job placements could be accounted for, thereby evaluating certain industrial education programs and classes.

A summary first. This is strictly on-job placement. It carries a lot of implications. It is separate, straightforward, and uncomplicated. It will do a lot of things for us. A standardized registration form would be given to every student entering a school -- junior college, high school, or adult education. The student would fill it out. The form includes questions that have been used on most school registration forms; it is a composite of many others, and is versatile, written in such a way as to be hand-tabulated, mark sensed, optical sensed, or read by some of the new IBM machinery.

Notice that little block on the right of the flow chart (-- see next page: "Error Correction ") Any mistakes, deletions, omissions on the registration form would be caught and the form sent back to the student registering. Even a small error would be caught immediately, for immediate correction. There are many error control features built into each step of the system. Any change, or errors, made by the student, will be the student's responsibility to correct. It is suggested that after the student appears in person and registers, the required "clearance of admission" be mailed to him. This will verify his address. Any "changes" would be noted, printed out by the computer, and sent to the student (via mail). If these changes were not made, or the form not received by the student, the registration would not be considered as complete.

Mailing any necessary correspondence to the student would be a continuous check on his address; and if out-of-district or out-of-state tuition is to be charged for attendance, a savings could be made by finding incorrect substitute addresses.

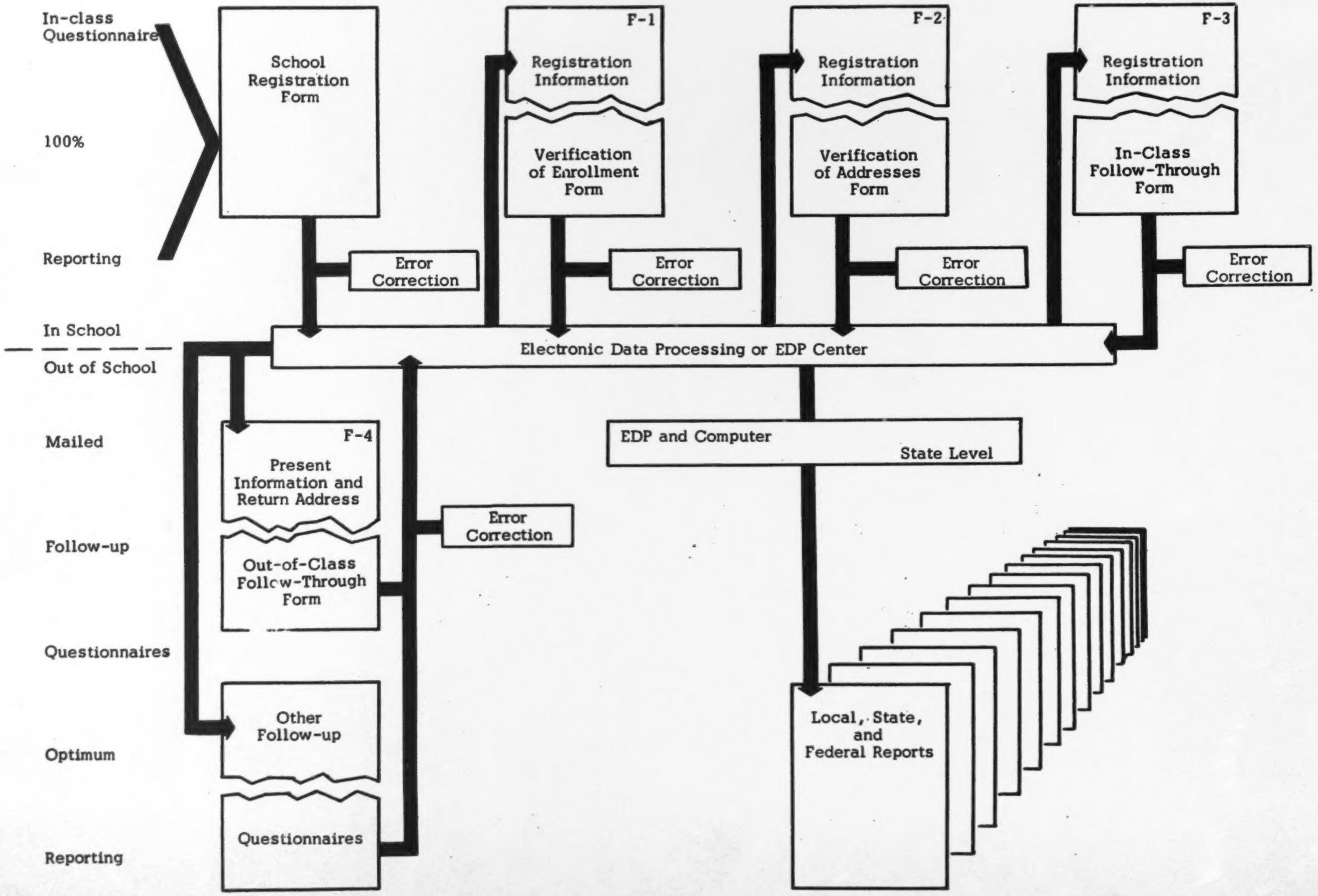
The student should now be completely registered, cleared for admission, and enrolled in the classes of his choice. The records are now complete and correct and have been entered into storage. The industrial education student may now be identified for the first time.

It would be possible now for all students to register by mail rather than in person, thus eliminating much of the usual confusion and traffic at registration time. We're thinking about using it at our school now. Students go through their regular enrollment procedure, and a card is sent to the student, addressed to him in a classroom. We identify the classroom as the address where the student is, in this particular case the school. He verifies his registration and presence in the class. We also ask him to verify a series of addresses. Three are required now for JC students. The holes on the card are ready to punch. The student punches them himself. If there is any error in the card it goes right back to the student. All he's doing at this point is verifying that he's in class.

Later on, a second form (F2) verifies his address. If there are no changes, he simply destroys the card. If there are changes, he so indicates on the card where changes are entered. The Verification of

FLOW CHART

QUESTIONNAIRES FOR FOLLOW-THROUGH AND JOB PLACEMENT REPORTS



CALIFORNIA STATE DEPARTMENT OF EDUCATION
BUREAU OF INDUSTRIAL EDUCATION

NAME | SCHOOL CODE | SOCIAL SECURITY NUMBER | CLASS CODE

INSTRUCTIONS:
PLEASE READ QUESTIONS CAREFULLY, THEN REMOVE THE DESIRED ANSWER TAB (S). (HOLD THE CARD DOWN, PLACE A SHARP PENCIL ON THE TAB, THEN GENTLY LIFT THE CARD). USE "0" BEFORE ANY ONE PLACE FIGURES.
THERE ARE FIVE QUESTIONS, WITH 10 TABS TO BE REMOVED.

EXAMPLE 2 UNITS

SIGNATURE _____

DATE _____

1. TOTAL NUMBER OF UNITS AND/OR HOURS PER WEEK YOU ARE ENROLLED IN? — UNITS | HOURS
2. IF EMPLOYED, HOW MANY HOURS PER WEEK? — HOURS
3. DO YOU INTEND TO OBTAIN EMPLOYMENT, OR MORE ADVANCED EMPLOYMENT AS A RESULT OF THIS CLASS? — YES / NO
4. INDICATE INTENDED DATE OF EMPLOYMENT. (IF DATE IS NOT KNOWN, ENTER DATE THAT THE TERM ENDS.)
5. ARE YOU NOW SEEKING PART-TIME EMPLOYMENT (PRESENT JOB STATUS NOT CONSIDERED)? — STUDENT NOT IN CLASS — YES / NO

REPORT OF JOB PLACEMENT, VERIFICATION OF ENROLLMENT FORM F-1

CALIFORNIA STATE DEPARTMENT OF EDUCATION
BUREAU OF INDUSTRIAL EDUCATION

NAME | SCHOOL CODE | SOCIAL SECURITY NUMBER | CLASS CODE

INSTRUCTIONS:
PLEASE COMPLETE EVERY QUESTION.
REMOVE TAB
COMPLETELY FROM
THE PROPER
ANSWER BOX.
EXAMPLE
(BLACKED-IN AREA
IS THE TAB
YOU PUNCH OUT)

1. ARE YOU CONTINUING IN SCHOOL FULL TIME AND IN THE SAME VOCATIONAL AREA? — YES / NO (IF YES, STOP HERE)
2.(a) IF YOU ARE DROPPING OUT OF SCHOOL (OR GRADUATING FROM SCHOOL) WITHOUT COMPLETING YOUR VOCATIONAL EDUCATION PROGRAM, ANSWER HERE
(b) IF YOU ANSWERED QUESTION 2(a) ABOVE AND YOU LEFT WITH ENOUGH SKILLS TO BE EMPLOYABLE IN THE OCCUPATION IN WHICH YOU RECEIVED TRAINING, ANSWER HERE
3. WILL YOU COMPLETE ALL THE REQUIRED COURSES THIS SCHOOL YEAR? ANSWER HERE — YES / NO
4. IF YOU ARE NOT PRESENTLY AVAILABLE FOR PLACEMENT, ANSWER ONE OF THE FOLLOWING — (a) JOINED ARMED SERVICES (b) CONTINUED FULL TIME SCHOOL (c) OTHER REASONS
5. IF YOU ARE WORKING FULL TIME (OR IN THE ARMED SERVICES) 30 OR MORE HOURS PER WEEK, ARE YOU WORKING — (a) IN THE OCCUPATION FOR WHICH YOU WERE TRAINED (b) IN A RELATED OCCUPATION (c) IN AN UNRELATED OCCUPATION
6. IF YOU ARE NOW EMPLOYED AND THE TRAINING YOU RECEIVED HAS RESULTED IN A PROMOTION OR A NEW JOB, ANSWER HERE
7. IF YOU ARE NOW GOING TO SCHOOL AND WORKING PART TIME (29 HOURS OR LESS PER WEEK), ANSWER HERE
8. IF YOU ARE UNEMPLOYED AND ACTIVELY SEEKING WORK (NON-STUDENT, FULL TIME OR PART TIME STUDENT), ANSWER HERE

IF STUDENT HAS NEVER BEEN IN CLASS, ANSWER HERE

INSTRUCTION: FORM F-3 IS SENT TO THE CLASSROOM JUST BEFORE THE DATE INDICATED BY ITEM 4 OF FORM F-1, OR THE COMPLETION DATE OF THE COURSE. IF THE STUDENT IS NOT NOW IN CLASS, THE INSTRUCTOR IS TO COMPLETE THE QUESTIONNAIRE TO THE BEST OF HIS KNOWLEDGE AND ABILITY.
IF THE INSTRUCTOR IS COMPLETING THE QUESTIONNAIRE IN ABSENCE OF THE STUDENT, ANSWER HERE.

SIGNATURE _____ DATE _____

REPORT OF JOB PLACEMENT, OUT OF CLASS FOLLOW-THROUGH Form F-2

CALIFORNIA STATE DEPARTMENT OF EDUCATION
BUREAU OF INDUSTRIAL EDUCATION

NAME | SCHOOL CODE | SOCIAL SECURITY NUMBER

INSTRUCTIONS:
PLEASE COMPLETE EVERY QUESTION.
REMOVE TAB
COMPLETELY FROM
THE PROPER
ANSWER BOX.
EXAMPLE
(BLACKED-IN AREA
IS THE TAB
YOU PUNCH OUT)

1. ARE YOU A FORMER STUDENT FILLING OUT QUESTIONNAIRE, ANSWER HERE. — YES / NO
2.(a) IF YOU DROPPED OUT OF SCHOOL (OR GRADUATED FROM SCHOOL) WITHOUT COMPLETING THE VOCATIONAL EDUCATION PROGRAM: ANSWER HERE
(b) IF YOU ANSWERED QUESTION 2(a) ABOVE, DID YOU LEAVE WITH ENOUGH SKILLS TO BE EMPLOYABLE IN THE OCCUPATION IN WHICH YOU RECEIVED TRAINING. ANSWER HERE.
3. IF YOU COMPLETED ALL THE REQUIRED COURSES LAST SCHOOL YEAR, ANSWER HERE.
4. IF YOU ARE NOT PRESENTLY AVAILABLE FOR PLACEMENT, ANSWER ONE OF THE FOLLOWING: — (a) JOINED ARMED SERVICES (b) CONTINUED FULL TIME SCHOOL (c) OTHER REASONS
5. IF YOU ARE WORKING FULL TIME (OR IN THE ARMED SERVICES) 30 OR MORE HOURS PER WEEK, ARE YOU WORKING — (a) IN THE OCCUPATION FOR WHICH YOU WERE TRAINED (b) IN A RELATED OCCUPATION (c) IN AN UNRELATED OCCUPATION
6. IF YOU ARE NOW EMPLOYED AND THE TRAINING WHICH YOU RECEIVED RESULTED IN A PROMOTION OR A NEW JOB, ANSWER HERE.
7. IF YOU ARE NOW GOING TO SCHOOL AND WORKING PART TIME (29 HOURS OR LESS PER WEEK) ANSWER HERE.
8. IF YOU ARE UNEMPLOYED AND ACTIVELY SEEKING WORK (NON-STUDENT, FULL TIME OR PART TIME STUDENT) ANSWER HERE.

SIGNATURE _____ DATE _____

REPORT OF JOB PLACEMENT, OUT OF CLASS FOLLOW-THROUGH Form F-3

Enrollment Form F-1,and Verification of Addresses Form F-2, are machine addressed and sent to each industrial education class. Form F-1 is a pre-printed questionnaire on a prescored card. The student's name, social security number, class and school code are all pre-recorded on, and machine punched into, the card. These, and later the home address, are referred to as the student's "address." He checks the data already on the card, reads the questions and makes the proper responses (answers) by punching out the pre-scored tabs. If he is on the class roster, but not actually in class, there is a response position for the instructor to punch out. Only one such questionnaire has to be completely filled out by the student, but one card will be dated and signed for each class the student is presently in. Form F-2 is a complete machine generated print-out (taken from the registration form). If the data is correct, the student does nothing; if incorrect, the student makes corrections and returns the form for updating of the records. Only one such form, if there are any changes, needs to be acted upon.

At this point for the first time, I am told, we know exactly how many students are in what classes. We also know when they will be ready for employment. We have this possibly three or four weeks after school starts, since the cards will be sent out one week, two weeks, or three weeks after beginning of classes. Imagine knowing at any given time how many machine shop students were enrolled in which schools and when they would be ready for employment!

The following kinds of current on-going data are now possible:

1. Total enrollment of all industrial education students. Figures can be compiled as to ethnic background, sex, age, marital status, locale, and so on.

2. Unduplicated student count.

3. Directory for all industrial education students.

4. Directory of all industrial education classes.

5. Directory of all California public schools offering industrial education classes and what classes are offered.

6. Total enrollment in a particular type of training program and when each student will be ready for employment.

7. Identification of students by stated major or by the major determined by the courses taken.

These data are some of the more obvious, but many more questions could be asked of the data bank, especially if the Registration Form for Junior Colleges could become standard -- standard, at least, as to content.

A student can be an academic major and be enrolled in machine shop. He can call himself an academic major or a machine shop major but we will specify what his major is. He can call himself what he wants to, and the machine will call him what we want. His subject will specify his major, rather than the other way round.

Before he leaves the class there will be another form sent out (F-3), with eight questions on it. He tells us at this point what his future plans are, if he plans to go to work, if he plans to continue in school, etc. The questions on the forms are 'hard' questions, based primarily on requirements for the VE 45 form (an annual report that the federal government requires of schools with vocational education; it's a difficult thing to fill out. It specifies pretty much what questions we ask).

When the procedures I'm describing are in effect, we might factor-analyze the questions and then go to Washington and say, "Your questions are not proper; these are the questions you should be asking." We could go back and say "Why don't you ask for information that would be useful to us as well as to you?" We could get some work done on the type of questions that we feel should be asked.

Normally a follow-up study is made when it's too late to do anything about a dropout. With this system we can identify a dropout almost immediately. Since the enrollment of all classes is now a matter of record and the data is continually being entered into the system and can be withdrawn anytime, it would now be possible to establish dropout rates for individual classes, school districts, regions, or for the total state. Dropout rates by ethnic background, sex, marital status, etc., could also be established. Thesekinds of data are important -- but more important, the counseling departments can now be in a position to study current data as to drop-outs and perhaps work directly with the student. The drop-out data is a "side-effect" evaluation factor of the proposed model for recording and reporting job placement data.

We can also help predict what classes we'll need for the next semester. We'll know how many are graduating. We need such an on-going process so we can know what is going on in the system at all times. This is a continuous system. The information is always going in and can be removed at any point. It doesn't stop or start at any particular time. We are "following through" with our students, not "following up." And we have the advantage of 100% reporting.

The In-Class Follow-Through Form F-3 is caused to be sent out by one of the questions on Form F-1. The student is asked the anticipated date of employment. If the date is not known, the date the class was to end is recorded. Before either of these dates occur, the computer addresses the F-3 questionnaire to the student asking him for further data. There are eight questions on the form; but for the purpose of the job placement study, the student is asked if he is going to work and if the occupation is one for which he is training, a related occupation, or an unrelated occupation. A Form F-3 must be completed for every student who verified enrollment in the class.

After the student leaves the class, we will send him still another form, an Out-of-class follow-through form. This is the first true follow-through instrument, and presents the greatest problem. But, with the aid of a computer, the addresses given on Form F-2, and the later corrections, if any, the problem would be greatly simplified -- at least at the school and individual level. This Form F-4 is caused to be sent to the former student by one of the following: 1. The completion date of the major; 2. The student going to work (a new word is "work-out"); or 3. Dropping out of school.

We have for each student three addresses. It is mailed to one of those addresses. The program for mailing can get rather complicated. Let's say we have #1, #2 and #3 addresses. We send this to the #1 address. There are about four things that could happen: the student could receive it and not answer it, he could receive it and answer it improperly, he could receive it and answer it properly. Clerically it could be a difficult problem to handle, especially on a state-wide basis. Even for a large school it would be difficult.

Let's say that this first address doesn't work. He doesn't mail it back at all so the computer after a period of time will send it to the second address. Again four things can happen. Again let's assume he is not at the second address so we send it to the third address. Again nothing happens. But if identification is made by social security number, we may lose a student for a few years, but eventually I think we'll get him back again.

On a local basis, you may want 100% reporting, which is possible for a school. For a region, you do not have to have 100% reporting. For the state, a sample will do.

Locating the students is not insuperable. I think as long as the student is in California we can find him again. The 1st, 2nd or 3rd job may not have anything to do with his training. The 4th or 5th job might have, and he will have at least five occupations in his lifetime. So if we can keep in touch with him we can help him prepare for the new occupations.

There are so many things we can do with this, so many other factors we could plug into the system. We are just talking about job placement now, but once the data bank is operative you could ask many other questions.

Consider the question of ethnic background. This one has been legalized for purposes of this questionnaire. I spent more time on that one item than on all the rest of them put together. It's here and it's been approved. An ethnic survey could be plugged in for any school operation, and it would be accurate. If we are to help minorities, we must first identify them. If this study doesn't do anything else, it identifies those students and lets us know almost immediately whether we're placing them or not. We've never known that before. We even know immediately if we're placing them best from short-term or long-term training programs. Three colleges are involved in a pilot project using the system -- Orange County, Modesto, and Foothill. The pilot efforts will be coordinated by UCLA.

Let me sum up again some of the information we'll be able to have available by the process: Accurate data for ethnic surveys. Current, ongoing feedback for decision-making. Identification of dropouts early enough to do something about them. Prediction of availability of students for employment. The means for a clearinghouse of transcripts. (That's a big one.) Improvement of predictions and trends. Objective evaluations of programs. Data for certain report forms, permitting elimination of others. (Almost all the VE-45 forms could be eliminated with a system such as this.) Continuing data for short-and long-term follow-through studies. Identification of majors. Simplification of enrollment procedures. Uniform information for vocational-education directories.

APPENDIX- CONFERENCE REGISTRANTS

Alt, Weston, State Department of Education
Armstrong, Vernon L., Santa Ana College
Aw, Mamadou B., Los Angeles Trade-Technical College
Bandley, Marion K., San Joaquin Delta College
Becker, George L., Long Beach City College
Bell, Max D., Mt. San Antonio College
Bezeire, Jack, Monterey Peninsula College
Boggs, John, ERIC, UCLA
Borst, Philip W., Fullerton Junior College
Brown, Jennings G., Antelope Valley College
Carhart, John, Contra Costa Junior College District
Clark, Robert M., Reedley College
Collins, William J., Chicos College
Conroy, David, Yuba College
Coniglio, Sharon, Monterey Peninsula College
Cook, Robert J., Los Angeles Southwest College
Crawford, Margaret L., Los Angeles Trade-Technical College
Crawford, Paul, Foothill Junior College District
Cresci, Gerald D., State Department of Education
Deasley, Kenneth G., State Department of Education
Dufour, Stuart, Hartnell College
Farley, Catherine, Merritt College
Fitch, Robert J., Cerritos College
Glaia, Jean, Los Angeles Trade-Technical College
Gold, Ben K., Los Angeles City College
Gothberg, Lillian, Los Angeles Trade-Technical College
Hansen, Michael F., College of Marin
Harris, Wayne, San Diego City College
Heinkel, Otto A., San Diego Junior Colleges
Hirsch, Walter, HEW, San Francisco
Hopkins, Frank O., Orange Coast College
Jacobsen, Richard, College of Sequoias
Koltai, Leslie, Pasadena Area Junior College District
Laird, Cecil W., Los Angeles Trade-Technical College
Locke, Charles S., Los Angeles Valley College
Mann, William M., Los Angeles Trade-Technical College
Martin, Lawrence, Fresno City College
Menefee, Audrey, American River College
Merson, Thomas, Bakersfield College
Metzgar, E. F., Grossmont College
Moore, James H., San Bernardino Valley College
Murdoff, Virginia, Napa Valley
Nash, Phil, Monterey Peninsula College
Neblett, Jack, Los Angeles Junior College District
Palmer, Chester H., Imperial Valley College
Pearce, Frank C., College of San Mateo
Rice, Eric D., Chaffey College
Rogers, E. Lance, City College of San Francisco
Sanden, Milton, Bakersfield College
Schechter, Arthur J., Cypress Junior College
Schumacher, Eugene, Antelope Valley College
Sheldon, M. Stephen, UCLA
Swanson, Lee, El Camino College
Wilson, William H., Solano College
Winter, Carl G., State Department of Education
Ziegler, Donald R., West Valley College
Jeffreys, Joseph, Fullerton College